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and will be paid as though he were a regular member of the Harvard University staff. Unless by special agreement, he will not be required to give more than one third of his time to teaching, and may devote the rest of it to graduate and research work in any of the departments of the university. Each college is to notify Harvard University of the appointment as early as possible in the preceding year. The arrangement will go into effect in the academic year 1911-12. The first professor of Harvard University to take part in this exchange will be Albert Bushnell Hart, Ph.D., LL.D., Litt.D., Eaton professor of the science of government. His term of service will fall in the second half-year.

SCIENTIFIC NOTES AND NEWS

MR. SAMUEL FRANKLIN EMMONS, eminent for his contributions to the scientific study of ore deposits, died of asthma on the morning of March 28, at his home in Washington, D. C., aged seventy years. On the afternoon of March 30, the members of the United States Geological Survey united in a short memorial service in appreciation of his character and work.

DR. THEOBALD SMITH, professor of comparative pathology in Harvard University, has been appointed visiting professor at the University of Berlin, for the second half of the academic year 1911-12.

PROFESSOR EDWARD L. MARK, director of the Harvard Zoological Laboratory, has been elected a foreign member of the *Königlichen Böhmische Gesellschaft der Wissenschaften* in Prague.

DR. LAZARUS FLETCHER, F.R.S., director of the British Museum (Natural History), has been elected an honorary fellow of University College, Oxford.

DR. C. G. ABBOT, director of the Astrophysical Observatory of the Smithsonian Institution, will this summer conduct an expedition to southern Mexico to make measurements of the sun's radiation, which will be compared with simultaneous observations on Mt. Wilson. The congress has made a special appropriation of \$5,000 for this work.

PROFESSOR HIRAM BINGHAM, of Yale University, will on June 10 leave for a six-months' expedition to Peru. He will be accompanied by a geologist, a topographer and a naturalist and it is hoped by a pathologist. He expects to explore the seventy-third meridian from the Amazon Valley to the ocean.

DR. ROLAND B. DIXON, of Harvard University, is spending the second half of the academic year in the Bureau of the Census in Washington, devoting himself to a statistical inquiry in regard to the Indians.

MR. WILLIAM S. KIENHOLZ has been appointed director of a marine biological laboratory located at San Pedro, Cal. This laboratory is in connection with the Los Angeles schools and the city of Los Angeles expects to spend ten thousand dollars for the laboratory during the next two years.

DR. MARIE C. STOPES, lecturer on paleobotany in the University of Manchester, and Dr. R. R. Gates, of the Missouri Botanical Garden, who met at the Minneapolis meeting of the American Association for the Advancement of Science, were married at Montreal on March 18.

THE April meeting of the American Mathematical Society will be held at University of Chicago on Friday and Saturday, April 28-29. At this meeting Professor Maxime Bôcher will deliver his presidential address, the provisional title of which is: "Charles Sturm's Published and Unpublished Work on Differential and Algebraic Equations." Except for the summer meetings, this will be the first united meeting of the whole society since 1896.

DR. S. WEIR MITCHELL delivered the last lecture of the season before the Harvey Society on Saturday evening, April 1, at the New York Academy of Medicine. The subject of the lecture was "William Harvey, the Discoverer of the Circulation of the Blood."

PROFESSOR A. A. NOYES, director of the Physico-chemical Research Laboratories at the Massachusetts Institute of Technology, recently made an address before the College of Science of the University of Illinois, in

which he outlined the research work in progress at the Massachusetts Institute as well as the general policy of the department.

PROFESSOR SVANTE ARRHENIUS, of Stockholm, delivered a lecture before the Scientific Association of the Johns Hopkins University on the evening of March 24 on "The Laws of Adsorption." In this lecture Arrhenius gave an account of some of his recent work in this field.

DR. VICTOR GOLDSCHMIDT, professor of crystallography at the University of Heidelberg, has visited the University of Michigan and has given several lectures before classes in mineralogy and geology.

PROFESSOR W. H. FREEDMAN, of Pratt Institute, Brooklyn, lectured at the University of Vermont on March 27 on "Some Recent Engineering Achievements," and on March 29 on "Wireless Telegraphy."

DR. HENRY P. BOWDITCH's books and scientific apparatus and the sum of \$4,000 are bequeathed to Harvard College for the Medical School by the provisions of his will. The bequest of \$4,000 is "to be added to the fund left by my father, J. Ingersoll Bowditch, the income of which shall be expended under the direction of the professor of physiology for the purpose of original investigation."

A BRONZE tablet in honor of Albert Benjamin Prescott, formerly director of the Chemical Laboratory of the University of Michigan, was put in place at the entry of the new chemical building at the university on March 15.

MRS. ELLEN HENRIETTA SWALLOW RICHARDS, instructor in sanitary engineering in the Massachusetts Institute of Technology, well known for her valuable contributions to sanitary problems, has died at the age of sixty-nine years. Mrs. Richards was the wife of Dr. Robert H. Richards, professor of mining engineering at the institute.

EDWARD FITCH CUSHING, Ph.B. (Cornell, '83), M.D. (Harvard, '88), one of the foremost physicians and public men of the city of Cleveland, died on March 23, at the age of forty-nine years. He had practised medicine in Cleveland for the last eighteen years and

was professor of the diseases of children in Western Reserve University. Dr. Cushing was the fourth of his family to follow the medical profession. His great-grandfather was a physician in New England; his grandfather, Erastus Cushing, and his father, Henry Kirke Cushing, were both physicians in Cleveland. His brothers are William E. Cushing, a lawyer and trustee of Western Reserve University; Henry P. Cushing, professor of geology in Western Reserve University, and Harvey Cushing, professor of surgery in the Johns Hopkins University.

At a special meeting lately held in the Berlin Royal Museum of Natural History, as we learn from *Nature*, the committee for the exploration of the dinosaur-bearing deposits of German East Africa exhibited a few of the more remarkable specimens already received. The collection consists chiefly of the remains of Sauropoda, some much larger than the gigantic species of North America. One humerus measures more than two meters in length, and some of the cervical vertebræ are twice as large as those of *Diplodocus*. The leader of the exploring party, Dr. W. Janensch, reports the discovery of two new localities in which dinosaurian bones are abundant.

THE Paris Academy of Medicine, which, in deference to the representations of the British government, recently agreed to designate the disease known as Maltese fever by the term "Mediterranean fever," has decided to adopt as its scientific appellation the name *Melitococcie*.

MRS. JOHN H. CASWELL, of New York, has presented to Trinity College the valuable collection of minerals gathered during his lifetime by the late John Henry Caswell. Mr. Caswell was graduated from Columbia University in 1865, and after three years' study in Germany became assistant in mineralogy in the newly organized Columbia School of Mines. In 1877 his business interests compelled him to give up the career of a scientific man, but he maintained his interest in mineralogy, and his collection became valuable. It contains about 4,000 specimens scientifically arranged and illustrates very completely the

typical crystal forms and their variations for a large range of mineral species.

THAT 126 persons bitten by rabid animals in Wisconsin have been treated during the past fourteen months at the Pasteur Institute established in connection with the hygienic laboratory at the University of Wisconsin, is shown by the report of Dr. M. P. Ravenel, the director. Over 170 animals supposed to have suffered from hydrophobia were examined by the experts at the laboratory, and the spread of the disease has been checked to a great extent. The patients treated came from 61 cities and towns in the state. Six persons are under treatment at the present time at the laboratory. The entire Pasteur treatment is given the patients at a cost of \$25, about one fourth the cost at institutions not conducted by the state. Funds are being asked the present legislature sufficient to allow the laboratory to administer the treatment free of charge.

THE production of natural gas in the United States in 1909, as ascertained by a joint canvass made by the United States Geological Survey and the Bureau of the Census, is estimated by B. Hill, in charge of this work, under the supervision of D. T. Day, to have been \$55,000,000, an increase of only about \$359,626 over that of 1908. There were no great changes in the industry during the year, the production continuing to decline in Kansas, and an increase being made in Oklahoma and in the Caddo field in Louisiana and in Texas. An interesting feature was the supplying of Fort Worth and Dallas from the gas fields of Clay County, Texas. For the year 1910 the total production is estimated at \$57,000,000, an increase of about \$2,000,000 over 1909. During 1910 a feature of great interest was the development of what promises to be a very large supply of natural gas in the Buena Vista Hills, Kern County, Cal., east of the Sunset-McKittrick oil field. Arrangements were made and practically completed during the year for piping this gas to Bakersfield and other towns in San Joaquin Valley.

AN International Congress of the Applications of Electricity is to be held in Turin,

Italy, on September 9-20. *Nature* states that this congress, as its title implies, will deal with questions of practical import, so that electrical engineers will be able to participate largely in the discussions. The chief endeavor of the organizing committee, which is under the chairmanship of Professor Luigi Lombardi, has been so to draw up the program that the congress may be international in character as well as in name. To attain this object, the cooperation of the International Electrotechnical Commission, with its local committees now established in many countries, has been obtained, as well as the assistance of the societies and associations in all countries dealing with electrical matters. With the help of these organizations, official reporters have been selected, and already many assurances have been received that numerous papers will be presented to the congress from all parts of the world. The initiators of the congress are the Italian Electrotechnical Society and the Italian local committee of the commission mentioned above. The congress is under the patronage of the Duke of the Abruzzi, who is the president of the committee of honor, upon which Professor Elihu Thomson and Colonel Crompton, the president and honorary secretary respectively of the commission, have been elected members. Papers may be presented in French, English, German and Italian, and the discussions will be carried on in all these languages.

THE annual meeting of the British Medical Association will be held in Birmingham from July 25 to July 28. The president this year is Dr. H. T. Butlin, consulting surgeon to St. Bartholomew's Hospital, and the president-elect Professor Robert Saundby, professor of medicine in the University of Birmingham. The president will deliver his address on Tuesday, July 25; the address in medicine will be given on July 26 by Dr. Byron Bramwell, president of the Royal College of Physicians of Edinburgh, and the address in surgery on July 27 by Professor Jordan Lloyd, of Queen's Hospital, Birmingham. For the purposes of the scientific business of the meeting sixteen sections have been authorized by the council.

The subjects to be dealt with and the presidents in each section are indicated below:

Anatomy and Physiology.—Professor T. H. Bryce, Glasgow.

Dermatology.—Dr. James Galloway, London.

Diseases of Children.—Dr. Otto Kauffmann, Birmingham.

Electro-therapeutics and Radiology.—Dr. Hugh Walsham, London.

Laryngology, Otology and Rhinology.—Mr. Frank Marsh, F.R.C.S., Birmingham.

Medical Sociology (including medical inspection of school children, hospital administration, and contract practise).—Dr. George Reid Stafford.

Medicine.—Dr. Alfred Carter, Birmingham.

Neurology and Psychological Medicine.—Dr. Edwin Goodall, Whitechurch, Cardiff.

Obstetrics and Gynecology.—Professor Edward Malins, Birmingham.

Odontology.—Professor Frank Huxley, Birmingham.

Ophthalmology.—Mr. Henry Eales, M.R.C.S., Birmingham.

Pathology.—Professor R. F. C. Leith, Birmingham.

State Medicine and Industrial Diseases.—Professor A. B. Hill, Birmingham.

Surgery.—Sir T. F. Chavasse, Birmingham.

Therapeutics, including Dietetics.—Sir Robert Simon, Birmingham.

Tropical Medicine.—Sir Francis Lovell, London.

THE department of forestry at the University of Montana proposes to organize a summer cruise for students of forestry. The party will probably start from Missoula, about July 1, for a tour of the western forest regions, visiting the best stands of timber, viewing the operations of the Forest Service on the national forests, such as timber-sales, planting, reconnaissance, etc.; also the operations of private concerns in logging and milling. Lectures on different phases of forestry will be given at appropriate points. The regions visited will include the northern Rocky Mountains, Puget Sound, the sugar pine country of southern Oregon and the redwood belts of California. A feature of the work will be the opportunity afforded for acquiring experience in camping, riding and packing, and familiarity with western conditions. The course will continue for about six weeks, and will be

open to a limited number. Those interested should address Professor J. E. Kirkwood, University of Montana, Missoula. The winter school for forest rangers at the University of Montana has just concluded its second session. An extension of the course is contemplated covering two years during the winter seasons. Courses are given in various phases of forestry as related to the administration of national forests. The staff of instruction includes part of the university faculty and officers of the Forest Service.

WE learn from *Nature* that a plan for the establishment of an Institute of Technical Optics has been approved by the education committee of the London County Council, and will shortly come before the council. The object of this scheme is the establishment in London of an Institute of Technical Optics for the training of opticians and optical instrument makers, and it is also hoped that valuable work may be done in connection with investigations in optical glass. The education committee proposes that the council shall grant £35,000 for the building and equipment of the new institute, the site, valued at about £12,000, having been already provided by the Northampton Polytechnic Institute, under the direction of the governors of which the new institute will be maintained. To ensure that the work shall be on the best lines, it is proposed to appoint a consultative committee representative of the trade, scientific and other organizations interested. The new institute will be maintained from funds at present used to maintain the technical optics department of the Northampton Polytechnic Institute, additional grants from the Board of Education and additional contributions from the London County Council. Later it is hoped that, in view of the national character of some of the work which may be developed, assistance may also be obtained from imperial funds. In the proposals under consideration, provision is made for the teaching of optical science with its technical applications, and of other subjects of value to the manufacturer and designer of optical instruments, and to the optician.

A NEW list of publications of the United States Geological Survey, just issued, contains the titles of more than a thousand books and pamphlets. These reports cover a wide range of subjects. They include not only papers on geology and topography but reports on water resources and on technology. The Geological Survey was the nursery of the United States Reclamation Service and the Bureau of Mines, which now, in full growth, are carrying along successfully work begun by the survey years ago. The survey, however, still continues its work on water resources and includes discussions of technology in its annual volume "Mineral Resources of the United States." A glance at this list will show the great diversity of the subjects considered and the manifold nature of the science of geology. The reports include discussions of geologic chemistry, mineralogy, petrography and paleontology, as well as ore deposition and other matters of very practical importance. Much of the survey's late work has been directed to the study of mineral deposits of economic value. The work done in land classification has not yet found detailed expression in the survey's reports, but some papers prepared as a result of land-classification surveys have been printed annually in bulletins entitled "Contributions to Economic Geology." The list may be obtained by applying to the director of the survey at Washington, D. C.

The statistics of production of gems and precious stones in the United States in 1909, which were collected by the Geological Survey and the Bureau of the Census and have just been published, show a large increase in value over 1908. The total value in 1909 was \$534,380; the value in 1908 was \$416,063. The increase is due chiefly to larger outputs of turquoise, tourmaline, variscite, chrysoprane, californite and kunzite. The production of a number of precious stones—as beryl, garnet, peridot and topaz—showed a decrease in value. The output of turquoise matrix and turquoise amounted to over 17 tons, that of variscite to over $3\frac{1}{2}$ tons and that of tourmaline to over $2\frac{1}{2}$ tons. An account of the occurrence and production of gem materials in the United

States, with notes on the precious stones industry, has just been published in pamphlet form by the Geological Survey in an advance chapter from "Mineral Resources of the United States, Calendar Year 1909." The pamphlet, entitled "The Production of Gems and Precious Stones in 1909," was prepared by Douglas B. Sterrett and may be obtained free by applying to the director of the survey.

UNIVERSITY AND EDUCATIONAL NEWS

THE legislature of Missouri has recently made appropriations for the state university which include \$100,000 for a new laboratory of physics and \$60,000 for a laboratory of agricultural chemistry. A building for veterinary science is now in course of construction at a cost of over \$30,000. In the recent appropriations the amount appropriated for salaries and current expenses exceeded that of two years ago for similar purposes by \$152,000. This amount will be mainly devoted to the increasing of salaries and the enlargement of the faculty.

AN anonymous donor has given Oberlin College the property fronting on South Professor Street in Oberlin, known as the Johnson estate. This comprises approximately twenty-two acres, and is valued at from \$35,000 to \$40,000.

By the will of Mrs. Amelia Worthington, of Boston, widow of Bishop Worthington, of Nebraska, a bequest is made to Williams College amounting to \$30,000, dependent upon certain contingencies.

MESSRS. MALLINCKRODT, of St. Louis, Mo., announce that they will pay a prize of \$500 to a chosen student of chemistry in the Graduate Schools of Harvard University during the academic year 1911-12, on condition that he will serve in the Mallinckrodt Chemical Works in 1912-13 at a suitable salary.

TRINITY COLLEGE has given Cambridge University the sum of £1,000, which is to be used toward the erection of buildings for physiology and for experimental psychology.

THE University of Manchester has received an anonymous gift of £1,000 for promoting research work in medical subjects.